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AUTHOR Silver, Archie A.; Hagin, Rosa A.
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ABSTRACT

A group of 41 children with learning disabilities, originally referred to the Bellevue Hospital Mental Health Clinic at ages 3 to 10 years for behavior problems was studied for 10 years after initial contact. A control group of 30 children was also identified--the two groups differed in academic achievement and in the presence of neurological problems. Data were reviewed on occupational status, academic achievement, and adjustment factors. Twenty-seven percent were involved in professional or technical occupations and 38 Ss had completed college and 9 had gone on to graduate school. Ten percent were judged to have made an excellent adjustment, 50% good, 27% average, and 13% marginal and poor. There was no significant relationship between occupational and educational outcomes and length of remedial education or age at onset of treatment. It was concluded that in spite of adequate social and vocational adjustment and some neuropsychological maturation, the problems of spatial and temporal organization persist through adolescence and into adulthood, particularly for those who are found to have complicating organic factors on neurological examination. (CL)

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OUTCOMES OF LEARNING DISABILITIES IN ADOLESCENCE

Archie A. Silver and Rosa A. Hagin

For an individual with a learning disability the outcome in academic, social, vocational, and psychological adjustment is the resultant of many factors: the causes, extent, and severity of the learning disability; the presence of complicating attentional deficits, hyperactivity, and neurological signs; the cognitive and biological substrate with which the child comes into the world; the psychological defences he has established; and most important, the adequacy and appropriateness of the environmental and educational support he has received.

With this complex interplay of forces, it is not surprising that long term reviews of the outcomes of children with learning disabilities report

Professor of Psychiatry, Division of Child and Adolescent Psychiatry, Department of Psychiatry and Behavioral Medicine, University of South Florida, Tampa, Florida

Professor of Psychological and Educational Services, Fordham University, Lincoln Center, New York City.

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inconsistency in outcome. For example, Schonhaut and Satz (1983) describe four studies reporting favorable outcomes, twelve with unfavorable outcomes and two with mixed outcomes. So many variables influence outcome, that from study to study, the results may not be comparable. Methodological considerations, such as comparability of subjects, nature and intensity of treatment, and follow-up variables must be considered if one is to compare outcome studies. The focus of outcome studies may also vary with some emphasizing academic, vocational status, or social adjustment, neuropsychological maturation, or psychological status. Few studies to date have attempted to evaluate all these areas. Even those that assess similar outcome variables differ as far as methodology and subjects are concerned.

For example, in one favorable outcome study, Rawson (1968) studied only occupational and educational outcomes. Her sample, however, was drawn from a private school with high socioeconomic level, the sample mean Stanford Binet IQ 130, and with every educational support available. Satz, Taylor, Friel, and Fletcher (1978), on the other hand, studied the entire white male population (N=426) of a public school system in rural Florida in which IQ scores were not specified. They found that of forty-nine children who were severely retarded readers at the end of second grade, only 6 percent were rated as average or above average readers by the end of fifth grade. Of sixty-two children considered mildly retarded readers at the end of second grade, only 17 percent were rated average or above by the end of fifth grade. Rawson's sample

presumably was treated with an Orton-Gillingham approach; Satz does not specify the teaching approach used with his sample. Thus, with two different populations with presumably different intervention systems and with different outcome measures, Rawson and Satz et al came to different conclusions.

Spreen (1978) in a ten year follow up of a sample from a neuropsychological clinic found that "in most aspects of educational, occupational, and social and psychological adjustment, the outcome of learning disabled children was worse than that of a control group." Spreen, moreover, found that with the learning disabled group, children with neurological signs had a poorer prognosis than those who did not. With few exceptions, population samples from public schools and from clinics tended to have poor academic achievement on follow up, while children in the higher socio-economic groups, who had the benefit of excellent educational support and remedial help, tended to have a greater measure of occupational and academic success.

Our initial follow-up studies (Silver and Hagin 1964) with children with learning disabilities, focused on academic achievement and on neuropsychological maturation. The emphasis was on the perceptual variables of orientation in space and in organization in time, functions which we believe to be basic to learning, reading, and the language arts. These functions were assessed through measures of visual discrimination, recall of asymmetric figures, visual figure-ground discrimination, visual motor control, in auditory sequencing and immediate auditory recall, and in right-left discrimination, praxis, and fingergnosis.

A group of forty-one children with learning disabilities, originally referred to the Bellevue Hospital Mental Health Clinic at ages eight to ten years for behavior problems, was studied for ten years after initial contact. A control group of thirty children, also originally referred to the Bellevue clinic for behavior problems and matched with the learning disability group for age, sex, socio-economic status, was also identified. The groups differed in academic achievement and in the presence of the neuropsychological problems in temporal and spatial organization.

At the time of the follow-up, it was possible to obtain information on all but five of the original learning disabled group and to examine twenty-four. Of those who were located but who were unavailable for examination, six moved away from the metropolitan area, two were in correctional institutions, one in a state psychiatric hospital and three in the armed forces. Of the original control group, eleven were available for individual study. On follow-up examination, the learning disability group was composed of twenty-one boys and three girls with median age nineteen years. Wechsler Adult Intelligence Full Scale IQ of the group ranged from 78-118 with a median IQ of 105. Controls consisted of eight boys and three girls with median age at follow-up of twenty years. IQ for the control group ranged from 94-124; median at 112. As children, the distribution of IQ scores did not differ significantly between reading disability and control groups. As adults, however, the IQ of controls were significantly higher ($p<.01$) than those of the reading disability group.

When the neuropsychological maturation of learning disabled and control groups was compared on follow-up, both groups could distinguish right and left in themselves and there was some maturation in visual-motor function. However, some of the primitive verticalization seen in learning disabled children did not entirely disappear. Angulation problems on the Bender Visual-Motor Gestalt Test were singularly tenacious. Visual figure ground problems, tactile figure ground errors, difficulty with auditory figure ground, and persistent fingergnosis immaturity were seen in the learning disabled adults. It seemed reasonable to conclude that, in spite of maturation in some areas, the neuropsychological problems in spatial and temporal organization which were seen in the children with learning disabilities do not disappear but persist into adulthood.

With the twenty-four children with reading disability examined in the follow-up study, there were five children who, in addition to the basic perceptual deviations in spatial and temporal organization, had complicating findings on neurological examination. These findings include hyperactivity, marked choreoform motility, or poor gross or fine motor coordination. These children are designated as a subgroup we have termed "organic." It is recognized, however, that structural defect of the central nervous system may not be demonstrated in them, and they may actually represent a more severe form of the learning disability syndrome. The findings on neurological examination are important, however, when we compare adequacy of educational outcomes within the subgroups.

Adequate readers were defined as those individuals whose reading scores obtained on the Wide-Range Achievement Test did not fall more than ten points below the adult IQs as obtained on the Wechslar Adult Intelligence Scale. By this criterion, fifteen of the reading disability group were found to be adequate readers as adults, while nine were inadequate. Our data showed that adequate readers: (1) tended to come from the developmental rather than the organic group ($p<.025$); (2) tended to have been less severely retarded in reading when tutoring was initiated ($p<.005$); (3) tended to show a rise in IQ as adults, although there was no significant difference as children ($p<.05$); (4) tended to have fewer figure background problems in visual perception ($p<.05$). On the other hand, the less adequate readers were found to have greater perceptual problems in all areas as adults ($p<.025$). No specific pattern of perceptual defects characterizes the group. The more adequate readers as adults, although relatively free of perceptual problems compared to the inadequate readers, still persisted with the body image and laterality problems they demonstrated as children.

Insert Table I about here

Figures I, II, and III

The data lead to the conclusion that basic neuropsychological problems which plague these individuals as children do not simply disappear. These problems persisted into adolescence and early adult life. Furthermore, the presence of complicating "organic" factors should alert the clinician to a more

guarded outcome and suggest the need in those children for modification of the usual compensatory remedial teaching.

The children of the initial follow-up study came from Bellevue Hospital Clinic population, the poor of the lower east side of New York City. By contrast, this report will describe a second follow-up: the occupational and academic outcome in seventy-nine patients with learning disabilities, studied and treated in a private practice of psychiatry and psychology during the years 1956-1976. In contrast to the Bellevue group, the private practice patients were drawn from middle and upper income families. There were eighteen girls and sixty-one boys. The ages at which treatment was begun spanned a range, with five children, seven years or younger; forty-six (more than half) between ages of eight and ten years, fifteen between eleven and thirteen years, ten between fourteen and sixteen years, and three seventeen years of age, when first seen by us.

Diagnostically, the cause of their learning disabilities varied. Our diagnostic criteria for diagnosis of learning disablity had both inclusionary and exclusionary features. In addition to significant discrepancy between educational expectancy and achievement in reading and the language arts, to be called a specific learning disablity, the child had to demonstrate immaturity in spatial orientation and temporal organization as evidenced in visual discrimination and recall of asymmetric figures, in visual figure-ground, in visual motor function, in auditory rote sequencing, immediate auditory recall, and in body image, including right-left discrimination, praxis, and

fingergnosis. These immaturities might appear in any combination and/or degree of severity. The degree of immaturity was estimated from the normative performance expected of the child's chronological age. As exclusionary criteria, children with Full Scale IQ on the WISC below 80, those with severe emotional handicaps and those with organic signs were not considered specific learning disabilities.

Criteria for the diagnosis of organicity included not only the presence of one or more deviations in the classical neurological examination of cranial nerves, muscle tone, power and synergy, deep and superficial reflexes, and gross sensory evaluation, but also the finding of so-called "soft" neurological signs. Soft signs have been considered as (1) minimal deviations in the classical neurological examination in which there are none of the signs of a localizing lesion, and (2) as immaturity in the normative aspects of development, at a developmental lag in the maturation of central nervous system function (Shafer et al. 1983). As such, we include immaturity in fine and gross motor coordination, in motor impulse control such as in choreoform motility and in synkinesis, in motor synergy including equilibrium, the presence of primitive postural response such as persistent neck righting response, evidence for lack of clear cut hemisphere specialization, sensory immaturity such as the presence of the extinction phenomena on bilateral simultaneous stimulation, or the displacement of sensory stimuli. It is recognized, of course, that the specific learning disability category may itself be a heterogenous group and may be subgrouped into areas of perceptual difficulty. Further, the presence of organic signs does not imply similarity

in etiology, but may encompass a variety of conditions including prematurity, anoxia, injury, infections, genetic deviations, and idiopathic seizure disorders.

Using these criteria, however, fifty-six of our seventy-nine children fit into the specific learning disability category, nineteen were "organic" learning disabilites, one child was considered as suffering from schizophrenia, one child was functioning at a retarded cognitive level and was diagnosed as Noonan's syndrome. In addition, two children were separately categorized as attention deficit disorders.

All children were evaluated with a comprehensive study which included neuropsychiatric examination, psychological testing, educational evaluation, and survey of the reality pressures at home and at school. All children received educational intervention. This training, done by the second author, was based upon the three principles: (1) that accurate spatial orientation and temporal organization are necessary for progress in learning reading, and the language arts; (2) that deficits in these neuropsychological functions may be remedied by specific perceptual stimulation of the deficit areas; and (3) when these foundation skills are in place, code based instruction in reading and the language arts should proceed until the individual's skills are appropriate to expectancy. Remediation accordingly differed from the conventional remediation and concentrated first on stimulation of the deficit areas and then providing intensive code based instruction until the individual was achieving appropriately.

Of the seventy-nine children, forty-seven were considered as having emotional problems already internalized, some a reaction to the frustration of failure, the confusion of their perceptual distortions, and the reality pressures at home and at school. These children received psychotherapeutic help in addition to the educational training. The remaining thirty-two children received educational help without formal psychotherapy, but in these children also, educational support in the form of necessary school adjustments and parent counseling were provided. It must be remembered that this was not a controlled study of treatment effect, but an attempt to offer optimal treatment to families in a private practice setting.

In 1983, occupational and academic data were obtained on seventy-two of the seventy-nine children originally seen during the years 1956-1976. With rare exceptions, all of the seventy-nine children and their families have kept in contact with us throughout the years by telephone calls when problems arose, by periodic follow-up visits and letters, and by treatment of other members of the family. Some came in for periodic follow-up examinations or at critical periods such as college application. For the seven children for whom no 1983 follow-up data were available, their status at their last visit was recorded.

Forty of the seventy-nine were originally seen and treated in 1956-1965, a follow-up of fifteen to twenty-four years. Eighteen of our original group were studied and treated between 1966-1970, a follow-up of ten to fourteen years, eleven seen in 1971-1975, a follow-up of five to ten years, and six were seen after 1975. Ages at follow-up were: 36 were ages 25 to 35, 25 ages 20 to 24,

13 ages 15 to 19, 4 ages 10 to 14, and 1 age 9. Follow-up period, thus, ranged from 24 years to 5 years with the greatest number (58 or 73 percent) in the 10 to 24 year follow-up period; ages at follow-up range from 9 years to 34 years with the greatest number (61 or 77 percent) ages 20 to 35 years.

Insert Tables 2, 3, and 4 about here

The overall findings in occupational status and academic achievement may be seen in Tables 2, 3 & 4. As adults, twenty-one (27 percent) are in professional or technical occupations including engineers, film makers, art historians, attorneys, a teacher, journalist, advertising copywriter and accountant, commercial photographer, and medical illustrator. In addition, twenty-three (29 percent) are in managerial, clerical, or sales occupations. Of these, fourteen are in the family business, seven of them taking an active and responsible role in management. Five of the total group are service workers, nineteen still in school or college. Two have been hospitalized, one for acute psychotic episode in the course of schizophrenia, the other suffering from a progressively degenerating neurological disease (subacute sclerosing panencephalitis). One is unemployed, another, with attention deficit disorder, died in an accidental drowning at age sixteen.

Insert Table 5 about here

As can be seen from the educational data in Table 5, thirty-eight subjects completed college, nine have gone on to graduate school, four left college

before graduation, nine are currently enrolled in college. Eight completed vocational school, six did not complete high school, six are still below college age, one is deceased, and, again, no data were obtained on seven. This group of 79 individuals with learning disability appears to have been relatively successful as adults vocationally and academically. The data, however, was subject to further analysis.

Each subject was evaluted in occupational and academic adjustment on a 5 point scale, with ratings as follows: An evaluation of excellent is used when the patient was judged to have (1) attained his full potential in the working world, and achieving local or even national recognition for contributions; (2) achieved honors in a competitive college or university. Eight (10 percent) of our original group are in this category, one a nationally recognized art historian, another a journalist with administrative responsibilities in a large New York City daily, another a helicopter pilot, another an engineer responsible for a patentable invention, another a prominent realtor, and the remaining three doing honors work in ivy league colleges. Good adjustment, (4 on the scale), was attained by forty (approximately 50 percent) of our children. An evaluation of "good" means that the individual has attained what could be expected on basis of his estimated abilities, but had not attained outstanding success in his field. These people are still considered successful. Eight of these good achievers have successfully completed graduate studies in psychology (1), law (2), podiatry (1), optics (1), art history (1), business administration (1), architecture (1), six of the group are engineers, two film makers, seven have managerial positions in family business.

Average achievement, (scored 3), was attained by twenty-one (27 percent) of the total group. By average, we mean: (1) the individual has attained what could be expected of him, but that his abilities are not great enough to take him past high school; or (2) he has not attained the potential we had expected, yet objectively, is managing to support himself and his family. An example of the former is Cindy, whose overall function was in the mildly mentally retarded range. Cindy, at age twenty-one years, attends a sheltered workshop. However, she finds her way about the city alone, has a group of friends and manages an independent existence appropriate to her intellectual level. She is well liked, conscientious, and reliable. An example of the latter is Daniel, the son of a prominent family. His overall cognitive functioning is in the superior range. Yet, he never could manage written examinations. Although he was admitted into a law school, the work was too much of a burden and he left at the end of two years. He then went to work in one of the many businesses in which his family was involved and soon took over management of the entire operation. Unfortunately, he never did and still does not care for the work and looks upon it as just a job.

A rating of 2, attained by eight (10 percent) of our patients, represents a marginal adjustment. Those people are managing to work, at a level that is not consistent with their potential. Ann is an example. Now age twenty-one, she was first seen in 1968 at age eight years nine months. At that time, it was noted that Ann was suffering from two major problems: evidence of perceptual dysfunction and an emotionl disturbance characterized by severe anxiety,

feelings of inadequacy, fear of being deserted by her divorced mother and father. On neurological examination, there were gross choreoform movements, an abnormal extension test, marked synkinesis, and poor motor coordination. On neuropsychological examination, there was marked angulation difficulty in visual-motor function, severe praxic errors, gross difficulty with right-left discrimination and auditory sequencing errors. Remedial work went on for thirty months, but it was not until age twelve that she returned for the psychotherapy which was recommended three years before. Progress was made, she earned her high school equivalency diploma. At age eighteen, she entered a special college program for learning disabled. She was never able to keep up with the work demanded of her and left college two years later to work with her father. Her work is unskilled and she is really biding time until she marries.

Two children of the seventy-nine had extremely poor outcomes: one was hospitalized intermittently with acute excerbations of schizophrenia, the other suffers from a progressive neurological disease.

However, the occupational and educational outcomes of the original group were generally favorable with 10 percent classed as excellent, 50 percent good, 27 percent average, and 13 percent marginal and poor.

There was no significant relationship between occupational and educational outcomes and length of remedial education or age at onset of treatment. However, 26 percent of the children with an organic diagnosis, contrasted with

7 percent of the SLD group, had poor or marginal outcomes; while 14 percent of the SLD, in contrast to 5 percent of the "organic" children, achieved excellent outcomes. (Figure IV and Table 6)

An individual, however, is more than his occupational and educational skills. Ivan, for example, age thirty-four at last evaluation, is a successful real estate operator. His income is well into six figures. He has a devoted wife who has a doctorate in biology, and two children still of pre-school age, who appear to be developing normally. Ivan was first seen in our office in 1953 at about age five years, brought primarily because of unintelligible speech. He was in constant clumsy motion with persistent rhythmic activity, poor fine-motor coordination, increased muscle tone on the left, and choreiform movements on intention. Deep tendon reflexes were increased with ankle clonus and questionable Babinski on the left. Severe perceptual immaturity was found in all perceptual avenues. He was apprehensive, phobic, clinging and ritualistic. It was felt that this was indeed structural CNS defect, possibly as a result of premature birth weight of two pounds eight ounces, followed by pneumonia and atalęctisis in the first montn of life. EEG was moderately abnormal with bitemporal paroxysml features. He received speech therapy from ages nine to twelve, and remedial reading from ages twelve to seventeen. However, he did not have the benefit of specific perceptual training. Psychotherapeutic help was given to Ivan and to his family through those years.

Repeat evaluations at age five, eight, twelve, and eighteen (Table 7, Figure V) revealed consistently high verbal abilities, but persistently averge

performance abilities. Perceptual errors persisted with consistent problems in spatial orientation including visual-motor, visual figure ground, auditory sequencing, and body image. At age eighteen years, he was still confused in right-left orientation and praxis. His reading had improved to a college level, but his reading speed score was only at the second percentile. He did go to college, dictated his reports, which were then typed by a secretary, went into a real estate venture with a relative, married a girl who is completely supportive, and bought a house near that of his parents. His conceptualization of real estate deals, however, show a firm grasp of his business, his holdings are in the millions. Ivan's history illustrates the tenacity with which perceptual deviations remain, particularly in an individual with organic CNS findings. Even under the best of circumstances, evidence of the old learning disability persists. With appropriate treatment and support, however, his abilities were developed and utilized in a successful and productive life.

CONCLUSIONS

The prognosis for academic achievement and occupational adjustment in children and adolescents with learning disability, who have the benefit of appropriate and sufficient educational intervention and who receive optimal and necessary environmental support, is favorable. For most, their potential, as suggested by their cognitive abilities, may be reached in adulthood. In children with more limited environmental supports, as seen in the Bellevue study, a majority learned to read, although subgroup differences were apparent when reading adequacy was examined. However, in spite of adequate social and

vocational adjustment and in spite of neuropsychological maturation in some areas, the problems of spatial and temporal organization persist through adolescence and into adulthood. This was particularly true of those with learning disability who are found to have, in addition, complicating "organic" factors on neurological examination.

One cannot assume that children will outgrow their learning disability spontaneously. Specific intervention and continued support for the children and their families appears to offer the best chances for optional adult functioning. As we review the occupational status of our private practice group, we are impressed with the patterns of occupational choices in our sample. Two-thirds of our group who attained professional and technical occupations chose work which required strengths in the visual perceptual and quantitative areas. These fields include engineering, film making, art history, medical illustration, accounting and finance. Only five of our group chose professions requiring language competencies as found in journalism, advertising, and law. This suggests to us the importance of guiding these patients through important transitions in their lives so that they may utilize their strengths and avoid fields in which their weakness would only doom them to disappointment (see cases of Danny and Ivan for unwise and wise decisions). Our experience indicates that even when the intervention with the learning problem has been successfully completed, adolescents need assistance as they reach such decision points as college planning and occupational choices. Despite the many variables contributing to educational achievement and

occupational status of children and adolescents with learning disability. The prognosis for the most part is favorable.

End

Table 1

CHARACTERISTICS OF ADEQUATE AND INADEQUATE READERS

Characteristic	Percentage Adequate Group	Percentage Inadequate Group	P
Diagnosis: organic	27	78	<0.25
Diagnosis: developmental	73	22	<0.25
Initial reading quotient below median for group	8	89	<.005
Initial IQ below median for group	46	50	NS
Rise in IQ as adults	77	25	< .05
Perceptual anomalies below median for group	53	0	<.025

Table 2

Learning Disabilities
Private Practice Follow up Study
OCCUPATIONAL STATUS

Professional and Technical	21
Managers, Proprieters, Clerical & Sales	23
Service Workers including Armed Services	5
In School or College	19
Hospitalized	2
Unemployed	1
Deceased	1
No Data	7
Total	79

Table 3

Learning Disabilities
Private Practice Follow-up Study
PROFESSIONAL AND TECHNICAL

Engineers	8	Teachers	1
Journalist	1	Podiatrist	1
Ad Copywriter	1	Accountant	1
Film Makers	2	Lawyer	2
Art Historians	2	Photographer	1
Medical Illustrator	1		

Total: 21

Table 4

Learning Disabilities
Private Practice Follow-up Study
MANAGERS, PROPRIETERS, CLERICAL AND SALES

Family Business	14
Management 7 Workers 7	
Real Estate	2
Security Clerk	1
Sales, Department Store	1
Office Workers	3
Lab Technicians	1
Manager/Rock Musician	1
Total	23

Table 5

Learning Disabilities
Private Practice Follow-up Study
EDUCATIONAL STATUS

College		51
Completed College	29	
Completed Graduate School	9	
Left Before Graduation	4	
Currently Enrolled	9	
Vocational Training		8
Art School	3	
Optics	1	
Paraeducation	1	
Beauty Culture	1	
Occupational Training	2	
Left High School before Graduation		6
Below College Age		6
Deceased		1
No Data		7
Total		79

Table 6

Learning Disabilities
Private Practice Follow-up
OUTCOME AND DIAGNOSIS

Diagnosis	Excellent		Good		Average		Marginal		Poor		
	#	%	#	%	#	%	#	%	#	%	Total
Organic	1	5	9	47	4	21	4	21	1	5	19
SLD	8	14	29	52	15	27	4	7	0	0	56

Table 7

Ivan: Changes in Cognitive Functioning

CA	5 years	8 years	12 years	18 years
	St.B.	St.B.	WISC	WAIS
IQ	108	119	112	116
			V.120	128
			P.100	98
Reading, oral			3.3 (Jastak)	14.8 (Jastak)
Comprehension			4.1 (Calif. Primary)	57th %ile D.R.T.
Spelling			2.6 (Jastak)	5.2 (Jastak)
				Speed 2nd. %ile

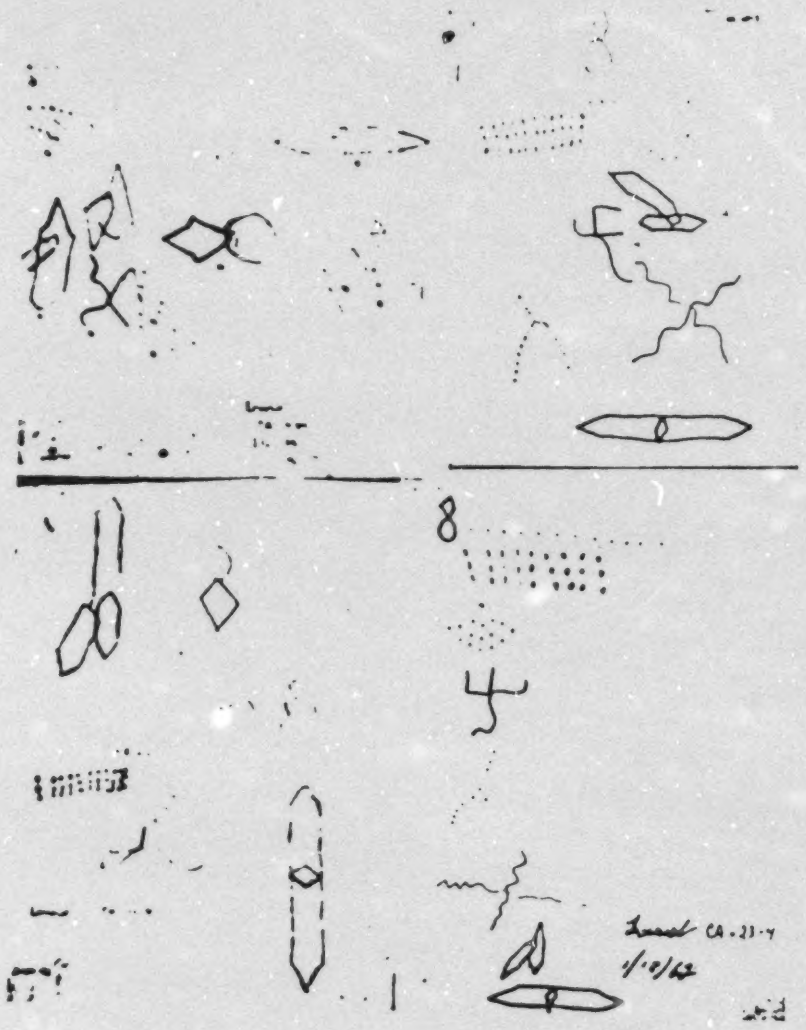

Figure I: This illustrates the persistence of visual-motor problems in a boy of average intelligence who had marked choreoform motility and gross intention tremor when seen at age 8 years. The upper left drawing illustrates the disorganized placment of the Gestalt figures, together with gross rotations and angulation difficulty. The upper right drawing was done one year later with significant improvement in organization, but with a dramatic 90 rotation of Figure A. The lower left drawing, done at age 12 years, and the lower right drawing, done at 23 years of age, reveal the same primitive verticalization.

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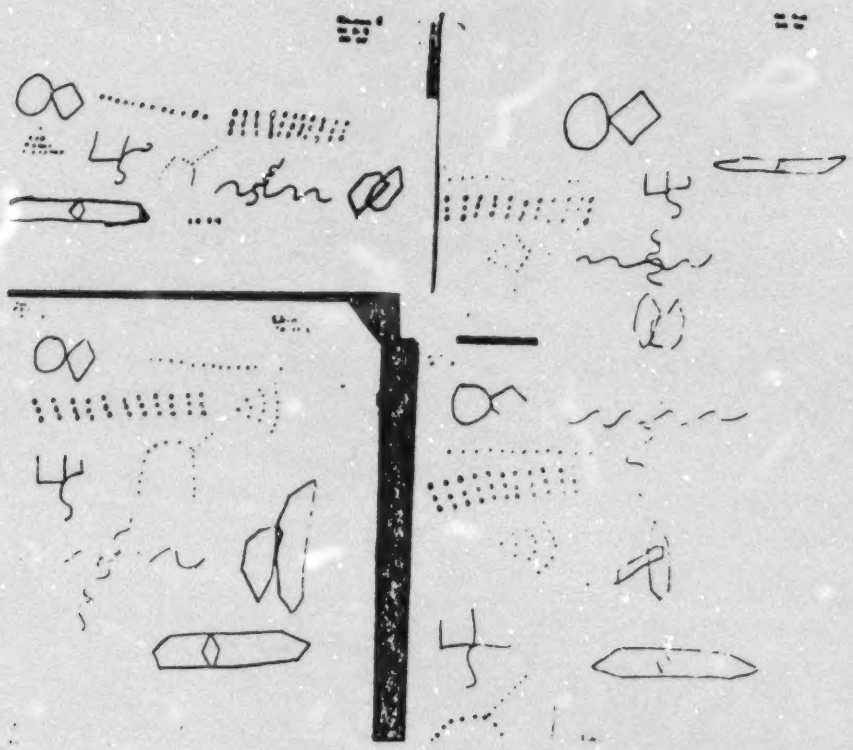

Figure II: This illustrates the maturation seen in visual-motor function in a girl of average intelligence who had the specific immaturities in spatial orientation and temporal organization we have come to associate with specific reading disability. Her reading improved in treatment, but as can be seen from the lower right drawing, remnants of her early visual-motor immaturity is still apparent.

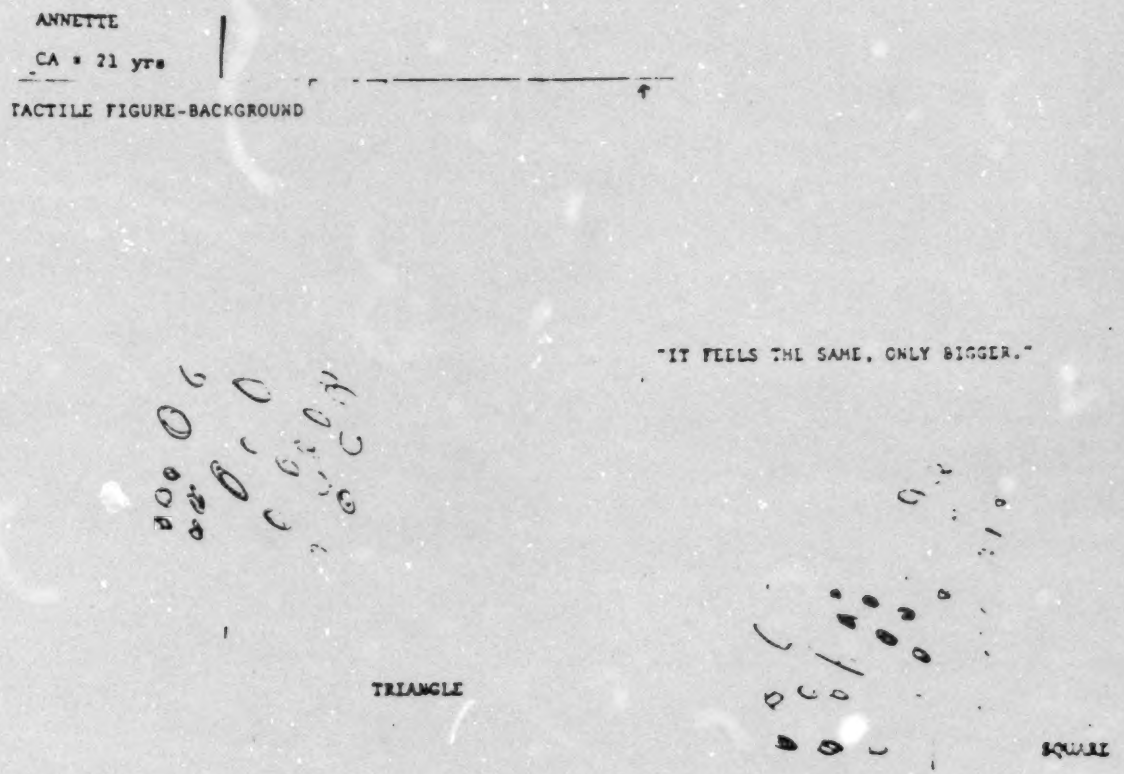

Figure III: This is a tactile figure-ground test in which the patient is asked, with her eyes closed, to identify a simple geometric figure of raised rubber capped thumbtacks in a field of smooth thumb tacks. The figures to be identified are triangle and a square. Even as an adult, Annette could not perform this task. She was first seen at age 10 years; she was anxious and depressed, and had significant immaturities in all perceptual areas. In addition, gross and fine motor coordination was poor. At age 12 years, her WISC, full scale, was 87 (V.89, P.87). At age 18 years, her Verbal IQ increased to 105, but her performance IQ was at 80. At age 21, her verbal IQ on the WAIS was 110. She refused to do the performance subtests. Her reading only improved to a 6th grade level.

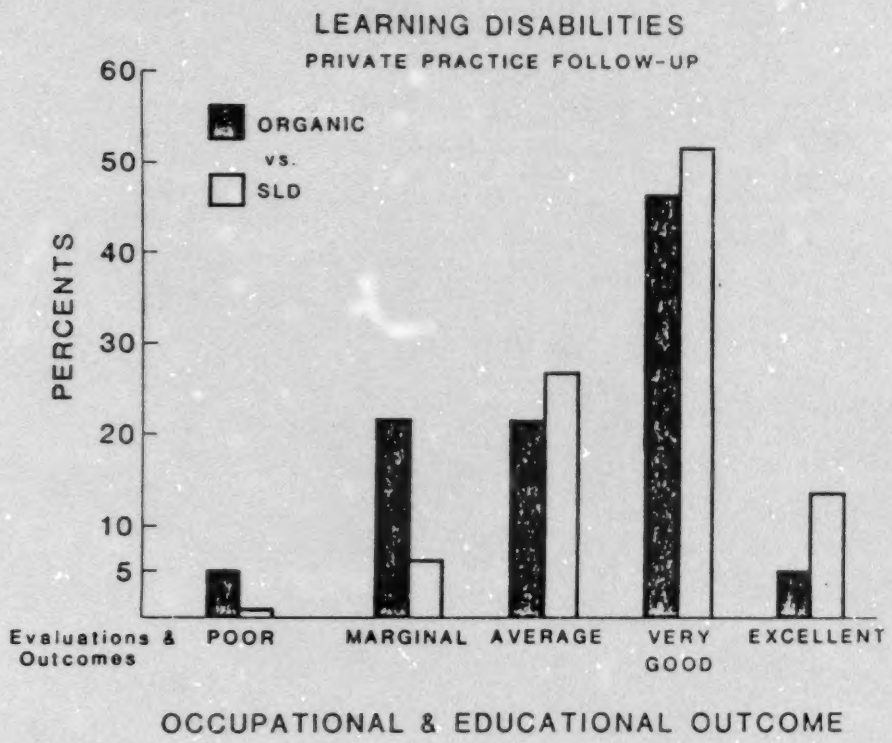
LEARNING DISABILITIES
PRIVATE PRACTICE FOLLOW-UP
ORGANIC
vs.
SLD
PERCENTS
60
50
40
30
20
10
5
Evaluations & Outcomes
POOR
MARGINAL
AVERAGE
VERY GOOD
EXCELLENT
OCCUPATIONAL & EDUCATIONAL OUTCOME

Figure IV

LITERATURE CITED

1. Ackerman, P.T., Dykman, R.A., and Peters, J.E. Learning disabled boys as adoelscents: Cognitive factors and achievement. Journal of the American Academy of Child Psychiatry, 1977, 16:296-313.

2. Balow, B., and Blomquist, M. Young adults ten to fifteen years after severe reading disability. Elementary School Journal, 1965, 66: 44-48.

3. Carter, R.P.A. A descriptive analysis of the adult adjustment of persons once identified as disabled readers. Unpublished doctural dissertation, Indiana University, 1964.

4. Dykman, R.A., Peters, J.E., and Ackerman, P.T. Experiemtnal approaches to the study of minimal brain dysfunction: A follow-up study. Annals of the New York Annals of Science, 1973, 205:93-108.

5. Gottesman, R., Belmont, I., and Kaminer, R. Admission and follow-up status of reading disabled children referred to a medical clinic. Journal of Learning Disabilities, 1975, 8:642-650.

6. Hardy, M.E. Clinical follow-up study of disabled readers. Unpublished doctoral dissertation, University of Toronto, 1968.

7. Howden, M.E. A nineteen-year follow-up study of good, average and poor readers in the fifth and sixth grades. Unpublished doctoral dissertation, University of Oregon, 1967.

8. Kline, C., and Kline, C. Follow-up study of 211 dyslexic children. Bulletin of the Orton Society, 1975, 25:127-144.

9. Muehl, S., and Forell, E.R. A follow-up study of disabled readers: Variables related to high school reading performance. Reading Research Quarterly, 1973, 9:110-123.

10. Preston, R.C., and Yarrington, D.J. Status of fifty retarded readers 8 years after reading clinic diagnosis. Journal of Reading, 1967, 11: 122-124.

11. Rawson, M. Development language disability: Adult accomplishments of dyslexic boys. Baltimore: Johns Hopkins University Press, 1968.

12. Robinson, H.M., and Smith, H.D. Reading Clinic: Ten years after. Elementary School Journal, 1962, 63:22-27.

13. Rourke, B.P., and Orr, R.R. Prediction of the reading and spelling performances of normal and retarded children: A four-year follow-up. Journal of Abnormal Child Psychology, 1977, 5:9-20.

14. Rutter, M., Tizard, J., Yule, W., Graham, P., and Whitmore, K. Research report: Isle of Wight Studies, 1964-1974. Psychological Medicine, 1976, 6:313-332.

15. Satz, P., Taylor, H.G., Friel, J., and Fletcher, J.M. Some Developmental and predictive precursors of reading disabilities: A six year follow-up. In A. Benton and D. Pearl (Eds.), Dyslexia: An appraisal of current knowledge. New York: Oxford University Press, 1978.

16. Schonhaut, S., and Satz, P. Prognosis for children with Learning Disabilities: A Review of Follow-up Studies pp542-563, in M. Rutter (ed) Developmental Neuropsychiatry, New York, Guilford Press, 1983.

17. Shaffer, D., O'Connor, Shafer, S.Q. and Prupis, S. Neurological "Soft Signs": Their Origins and Significance for Behavior pp144-146, in M. Rutter (ed) Developmental Neuropsychiatry, New York, Guilford Press, 1983.

18. Silver, A.A., and Hagin, R.A. Specific reading disability: Follow-up studies: American Journal of Orthopsychiatry, 1964, 34:95-102.

19. Spreen, O. Learning-disabled children growing up (Finale report to Health and Welfare Canada, Health Programs Branch) Ottawa: Health and Welfare Canada, 1978.

20. Trites, R., and Fiedorowicz, C. Follow-up study of children with specific (or primary) reading disability. In R. Knights and D.J. Bakker (Eds.), The neuropsychology of learning disorders: Theoretical approaches (Proceedings of NATO Conference). Baltimore: University Park Press, 1976.

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